IAW
AF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor :	Venolia et al.	Appeal No. ---
Appln. No. :	09/421,710	
Filed :	October 20, 1999	Group Art Unit: 2641
For :	METHOD AND APPARATUS FOR DISPLAYING SPEECH RECOGNITION PROGRESS	Examiner: A. Armstrong
Docket No.:	M61.12-0144	

SUPPLEMENTAL BRIEF FOR APPELLANTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

First Named Inventor	: Venolia et al.	Appeal No. ---
Appln. No.	: 09/421,710	
Filed	: October 20, 1999	Group Art Unit: 2641
For	: METHOD AND APPARATUS FOR DISPLAYING SPEECH RECOGNITION PROGRESS	Examiner: A. Armstrong
Docket No.	: M61.12-0144	

SUPPLEMENTAL BRIEF FOR APPELLANT

I HEREBY CERTIFY THAT THIS PAPER IS BEING SENT BY U.S. MAIL, FIRST CLASS, TO THE COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, THIS

20th DAY OF January, 2005.

PATENT ATTORNEY

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

On July 8, 2004, Appellants submitted an Appeal Brief for Appellant in support of an appeal of the final rejection of claims 1-33 that was reported in the Office Action of April 7, 2004.. On October 20, 2004, prosecution was re-opened by the Examiner and new grounds for rejection were asserted. Appellants hereby request reinstatement of the Appeal. This Supplemental Brief for Appellant addresses the new grounds for rejection.

REAL PARTY IN INTEREST

Microsoft Corporation, a corporation organized under the laws of the state of Washington, and having offices at One Microsoft Way, Redmond, Washington 98052, has acquired the entire right, title and interest in and to the invention, the application, and any and all patents to be obtained therefor, as assignee in an Assignment recorded on Reel 010578, frame 0070.

RELATED APPEALS AND INTERFERENCES

Appellant knows of no appeals or interferences that would directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF THE CLAIMS

Claims 1-33 are pending, rejected and appealed.

STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection.

SUMMARY OF INVENTION

The invention provides a method and computer program for generating images of meters related to speech recognition on a display device 85.

Under one embodiment of the method, an insertion marker 214 is displayed on display 85 and a progress meter 244, 376 is displayed near the insertion marker. The progress meter quantitatively indicates the amount of progress in decoding a speech input. (See page 17, lines 17-20). A method of generating a progress meter is shown in Fig. 12 and discussed on pages 33-34.

Under other embodiments of the present invention, a quantitative progress meter is combined with a volume meter as shown in Figs. 4G, 4H, 4I, 6E, 7D, 8C and 9D. By combining the progress meter and the volume meter, the user is able to track the volume of their speech and the progress of the speech recognition system without substantially moving their eyes.

Under one such embodiment, the volume meter is constructed according to a method shown in Fig. 11. In Fig. 11, an input analog value is converted into a digital value that is then transformed (step 459 of Fig. 11). The transformed value is stored in a buffer at step 460. The value of the transformed value is compared to a transform maximum to determine a percentage value at

step 466. This percentage value is then used to form the volume meter.

In some embodiments, each speech sample is associated with a separate token, such as tokens 220, which consist of a set of subordinate blocks such as blocks 228 and 230 of Fig. 4D. Tokens also include a background rectangle 232. In some embodiments, the progress meter is shown by converting the color of the background rectangle of each volume token.

The size of the blocks in the tokens is determined at step 468. Up to three different blocks can be constructed for a single speech value with each block having a maximum size. The determination of the subordinate block sizes is discussed on page 29, line 12 to page 31, line 5, and involves calculating a height ratio based on the percentage of the transformed value to the transform maximum and comparing the height ratio to maximum height ratios for each block.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-33 were rejected under 35 U.S.C. §112, first paragraph because it was said that the specification did not enable decoding speech input.

Claims 1-3, 13-14, 17-21 and 29 were rejected under 35 U.S.C. § 103(a) as being obvious from the combination of VanBuskirk et al. (U.S. Patent No. 6,075,534), Tannenbaum (U.S. Patent No. 6,233,560) and Neilsen(U.S. Patent No. 6,639,687).

Claims 4-12, 15, 16, 20, 22-28 and 30-33 were rejected under 35 U.S.C. § 103(a) as being obvious from the combination of VanBuskirk et al., Tannenbaum, Neilsen and French-St. George et al. (U.S. Patent No. 6,018,711).

ARGUMENT

§112 rejection of claims 1-33

Claims 1-33 were rejected under 35 U.S.C. §112, first

paragraph, because the specification, "while being enabling for determining an amount of speech sample that has been recognized, does not reasonably provide enablement for decoding speech input." Specifically, "[t]he specification does not provide a description of the system/apparatus having received a coded speech signal or a corresponding decoder for decoding the coded speech."

First, Appellants note that the claims of the present invention are not directed to a method of performing speech recognition, but instead are directed displaying the progress of speech recognition. Thus, the present application does not need to enable speech recognition but only needs to enable displaying the progress of speech recognition.

Second, Appellants in fact enable speech recognition. On page 24 lines 7-10, Appellants indicate that an example speech recognizer is available from Microsoft Corporation of Redmond, Washington and is called the Microsoft Continuous Speech Recognition Engine. Thus, to practice speech recognition, those skilled in the art simply need to obtain this recognition engine. In addition, pages 24-25 and 32-33 of the specification describe how speech is captured from a user, converted into digital values, grouped into frames and then converted into sub-word units by applying the frames of values to models to identify a path through a trellis. For those skilled in the art, this would be more than enough information to construct a speech recognizer even if Appellants had not indicated where such a recognizer could be obtained.

Thus, Appellants have provided more than enough information for those skilled in the art to either obtain or construct a speech recognizer that could be used with the present invention. As such, claims 1-33 are enabled under 35 U.S.C. §112, first paragraph.

Claims 1 and 2

Independent claim 1 and dependent claim 2 were rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk et al. (U.S. Patent No. 6,075,537, hereinafter VanBuskirk) in view of Tannenbaum (U.S. Patent No. 6,233,560) and Neilsen (U.S. Patent No. 6,639,687).

Independent claim 1 provides a method of displaying images on a display device. The method includes displaying an insertion marker at an insertion area on a display and displaying a progress meter near the insertion area based on the location of the insertion marker. The progress meter quantitatively indicates the amount of progress in decoding a speech input.

VanBuskirk describes a volume tracking window for a speech recognition system. Under VanBuskirk, the detected volume of a speech signal is represented in a window by changing the color of the entire window or by moving a colored bar horizontally to show the current volume. The volume tracking window in VanBuskirk may be a "floating window", however, VanBuskirk does not show or suggest that the volume tracking window should be placed near an insertion marker. In addition, VanBuskirk does not show or suggest a progress meter that shows the amount of progress in decoding an input speech signal.

Tannenbaum discloses a speech recognition interface in which fully recognized phrases or commands are displayed in a box. Under Tannenbaum, the recognized phrase or command is used to determine where to position the box on the display. Tannenbaum does not disclose displaying a progress meter that indicates the amount of progress in decoding a speech signal. In addition, because Tannenbaum requires the recognition of the command before it can determine where to place the recognition result, its teachings could not be used to position a recognition progress meter since the commands would not be known during the period of

time when the progress meter needs to be displayed. Thus, under Tannenbaum, it would not be possible to place a progress meter near an insertion area since the command is unknown until recognition is complete.

Neilsen discloses a technique for displaying the progress of multiple print jobs. The display allows users to select a print job to see how much of the job has been printed. Neilsen makes no mention of displaying the amount of progress in decoding a speech input or the ability to place such a progress meter at an insertion area.

In the Office Action, it was asserted that it would be obvious to modify the system of VanBuskirk to implement displaying visual feedback information regarding processing of the executing tasks as taught by Neilsen. Appellants dispute this assertion.

First, none of the cited references show or suggest a progress meter that shows the amount of progress in decoding an input speech signal. While Neilsen shows a progress meter for print jobs, it does not discuss progress meters for decoding an input speech signal.

Second, it would not be obvious to modify VanBuskirk to include a progress meter because VanBuskirk suggests that information provided in the display should be kept to a minimum. Specifically, in Column 1, lines 27-30, VanBuskirk indicates that "the challenge posed for developing an improved graphical speech interface is to present the minimal information required in the smallest space possible." VanBuskirk goes on to indicate that the information needed is "1)the state of the microphone speech system, that is on, off or asleep; 2)the last recognized phrase; 3) whether the application has speech focus; 4)feedback that the application is working; and, 5)status messages from the speech system."

Thus, VanBuskirk suggests that only the minimum required information should be provided to the user. That information does

not include a progress meter that quantitatively indicates the amount of progress in decoding a speech input. If it did, VanBuskirk would have included such a meter in the display. The fact that VanBuskirk does not include such a progress meter and the explicit statement that only required information should be provided to the user, would suggest to those skilled in the art that a progress meter should not be added to the VanBuskirk display.

Further, there is no suggestion in either VanBuskirk or Neilsen for how a quantitative progress meter could be added to the display in VanBuskirk without increasing the size of the VanBuskirk display. This is significant because VanBuskirk indicates that "[g]enerally speaking, the smaller the graphical user interface for speech recognition, the better." (VanBuskirk, Col. 1, lines 18-20). Without a suggestion in one of these references for how an additional quantitative progress meter could be added to the display without increasing its size, those skilled in the art would not have modified the VanBuskirk display because that would have been against VanBuskirk directive that the display should be kept as small as possible.

In addition, the combination of references does not show or suggest the ability to place a progress meter at an insertion area designated by an insertion marker. In the Office Action, it was asserted that Tannenbaum teaches this aspect of the invention because it teaches that recognized commands should be displayed at a location functionally related to the analyzed contents and context of the voice input. However, the teachings of Tannenbaum could not be applied to a progress meter.

In particular, Tannenbaum's system requires that the input be analyzed to determine which command has been spoken. See column 2, lines 40-47 and column 7, lines 7-24. Note in particular that the system does not know if the user has issued a command to open a file or move a cursor until it has decoded the word spoken by

the user. Without that information, Tannenbaum does not know whether to place the feedback near the tool bar or near the cursor. Thus, Tannenbaum must wait for the recognition to be performed before placing its feedback box on the screen.

However, waiting to place the feedback box until after the recognition is complete defeats the purpose of displaying a progress meter indicating the progress of recognition. In particular, since Tannenbaum must wait for the full recognition to finish, it is impossible for Tannenbaum's system to be used to place a progress meter, which must be displayed before the recognition is completed in order to quantitatively show the progress in decoding a speech input.

In light of the fact that none of the cited references provide a system that allows a progress meter to be positioned at an insertion marker and because there is no suggestion in the cited references for displaying a quantitative progress meter that indicates the progress in decoding a speech signal, the invention of claims 1 and 2 is patentable over VanBuskirk, Tannenbaum and Neilsen.

Claim 3

Dependent claim 3 depends from claim 1. In claim 3, a user's speech input is converted into an analog speech signal and that signal is converted into at least one digital speech value. The at least one digital speech value is then transformed into coordinates for at least one shape on the display which is positioned near the progress meter.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, and Tannenbaum.

The combination of VanBuskirk, Neilsen and Tannenbaum does not show or suggest a display that includes both a progress meter and a shape that is formed by transforming a digital speech value into coordinates.

In the Final Office Action, it was asserted that VanBuskirk teaches that a multi-function graphical user interface should be shown in as small a space as possible and that it would therefore be obvious to display a volume meter near a progress meter. Applicants dispute this assertion.

First, Appellants note that none of these references show or suggest a progress meter that quantitatively shows the amount of progress in decoding a speech signal. Thus, those skilled in the art would first have to create such a progress meter from these references without even a suggestion in any of the references that such a progress meter should be constructed.

After the progress meter is constructed, those skilled in the art still would not have produced the invention of claim 3. To produce the invention of claim 3, those skilled in the art would have to take the further step of combining the progress meter with another shape formed by transforming a digital speech value. However, there is no suggestion in the art for combining a progress meter with such a shape in the cited art.

Although VanBuskirk does teach that different types of information can be conveyed in the same graphical interface, it does not show or suggest that a shape formed by transforming a digital speech value should be combined with a progress meter.

Since none of the cited references show or suggest a progress meter for showing the progress in decoding a speech signal, the combination of references cannot show or suggest the combination of a progress meter and a shape generated from a digital speech value. As such, claim 3 is patentable over VanBuskirk, Neilsen and Tannenbaum.

<u>Claim 4</u>

Claim 4 depends from claim 3. In claim 4, the step of transforming at lest one digital speech value into coordinates includes applying a mathematical function to the at least one

digital speech value to produce a transform value and using the transform value to identify coordinates for the shape on the display.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George et al. (U.S. Patent No. 6,018,711, hereinafter French-St. George).

French-St. George discloses an animation that indicates the amount of time the user has left in which to provide speech input to a speech recognizer. French-St. George does not suggest that this animation should be placed near an insertion point and does not show or suggest a progress meter that indicates the amount of progress in decoding an input speech segment. In addition, French-St. George does not suggest identifying coordinates for at least one shape on the display by applying a mathematical function to at least one digital speech value to produce a transform value.

In fact, none of the references in the combination of VanBuskirk, Neilsen, Tannenbaum, and French-St. George show or suggest applying a mathematical function to at least one digital speech value to produce a transform value and then using that transform value to identify coordinates for at least one shape on a display. In rejecting claim 4, the Examiner never asserted that any of the references show a mathematical function applied to at least one digital speech value to produce a transform value. As such, the invention of claim 4 is not shown or suggested in the combination of the references cited by the Examiner and claim 4 is therefore patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 5

Claim 5 depends from 4. Claim 5 includes a further limitation wherein applying a mathematical function comprises

taking the logarithm value of at least one digital value. This additional limitation is not shown or suggested in the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, none of the cited references show or suggest taking a logarithm of a digital speech value. Furthermore, the Examiner has not asserted that any particular section of any of these references shows the taking of a logarithm of a digital speech value.

Since none of the references show or suggest taking the logarithm of a speech value, claim 5 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 6</u>

Claim 6 depends from 4 and includes a further limitation wherein the mathematical function comprises taking the square root of at least one digital value.

Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

None of the cited references show or suggest taking the square root of at least one digital speech value to produce a transform value that is then used to identify the coordinates of at least one shape on the display. In addition, no section of the references has been cited as showing the application of a square root function to a digital speech value.

As such, claim 6 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 7</u>

Claim 7 depends from claim 4 and includes a further

limitation wherein the shape formed from the transformed value is a base rectangle and the coordinates of the base rectangle are determined by determining a base point for the base rectangle on the display, accessing a stored rectangle width, and accessing a maximum transform value. The transform value formed from the digital speech value is divided by the maximum transform value to produce a transform ratio. A height is calculated based in part on the transform ratio. The coordinates of the base rectangle are then calculated based on the base point, the stored rectangle width, and the calculated height.

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, none of the cited references show or suggest the steps of claim 7. In particular, none of the cited references show or suggest accessing a maximum transform value, dividing a transform value produced from a digital speech value by the maximum transform value, or using the resulting ratio to calculate coordinates for a base rectangle.

Since none of these steps are shown in any of the references, the invention of claim 7 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 8</u>

Claim 8 depends from claim 7 and includes a further limitation where determining a calculated height includes determining if the transform ratio is greater than a maximum height ratio for the base rectangle and if it is, performing a further step of multiplying the maximum height ratio for the base rectangle by the full meter height to produce the calculated height.

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, none of the cited

references show or suggest the steps of claim 8. In particular, none of the references show a step of comparing a transform ratio to a maximum height ratio for a base rectangle to determine which is larger. In addition, none of the references show or suggest performing a further step of multiplying the maximum height ratio for the base rectangle by a full meter height if the transform ratio is greater than the maximum height ratio.

Since none of the cited references show these steps, the combination of these references does not show or suggest these steps. As such, claim 8 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 9</u>

Claim 9 depends from claim 8 and was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French St. George.

In claim 9, the maximum height ratio for the base rectangle is subtracted from the transform ratio to produce an excess ratio. A second rectangle height is then determined based in part on the excess ratio. The coordinates of a second rectangle are then calculated based on the coordinates of the base rectangle, a stored rectangle width, and the second rectangle height.

None of the cited references show a step of subtracting a maximum height ratio from a transform ratio or a step of using the resulting difference to determine the height of a second rectangle. As such, the combination of references does not show the invention of claim 9. Claim 9 is therefore patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 10</u>

Claim 10 depends from claim 9 and includes a further limitation wherein determining the second rectangle height

involves comparing the excess ratio to a maximum height ratio for the second rectangle.

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, no particular section of any of these references was cited by the Examiner to support the rejection of claim 10 and in fact, no section of these references shows a step of determining a rectangle height for a second rectangle. As such, claim 10 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 11</u>

Claim 11 was rejected under 35 U.S.C. § 103(a) as being obvious from VanBuskirk, Imade, Tannenbaum and French-St. George.

Claim 11 depends from claim 10. Under claim 11, the maximum height ratio for the second rectangle is subtracted from the excess ratio to produce a remainder ratio. A third rectangle height is then determined by multiplying the remainder ratio by the full meter height. The coordinates of a third rectangle is then determined from the third rectangle height.

None of the references in the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George shows or suggests determining the coordinates of a third rectangle. In the Office Action, no portion of any of these references was cited as disclosing the calculation of a third rectangle. As such, the invention of claim 11 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

<u>Claim 12</u>

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 12 depends from claim 7 and includes a limitation

to calculating the coordinates of a background rectangle where the background rectangle appears somewhere between the base rectangle and a point at a full meter height above a bottom edge of the base rectangle.

None of the cited references disclose calculating the coordinates of such a background rectangle. In addition, the Office Action did not cite any portion of these references as showing such a background rectangle. As such, the invention of claim 12 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 13

Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of VanBuskirk, Tannenbaum and Neilsen.

Claim 13 depends from independent claim 1. In claim 13, the progress meter of claim 1 is displayed by dividing the speech input into frames, and decoding at least one of the frames of the speech input into a sub-word unit. A frame number for the last frame to be decoded is divided by the total number of frames to produce a decode ratio. The progress meter is then displayed based on this decode ratio.

None of the cited references show or suggest dividing a frame number for a last frame of speech to be decoded by the total number of frames in order to produce a decode ratio. As such, claim 13 is patentable over the combination of VanBuskirk, Neilsen, and Tannenbaum.

Claim 14

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of VanBuskirk, Tannenbaum and Neilsen.

Claim 14 depends from claim 13 and includes limitations

to multiplying the decode ratio by a full meter width to determine a progress width and calculating the coordinates of a progress rectangle based on the progress width, a stored meter height and a base point on the display.

None of the cited references show or suggest multiplying a decode ratio by a full meter width, nor do they show or suggest calculating the coordinates of a progress rectangle based on the result of such a multiplication. Since none of the references show any of these steps, their combination does not show or suggest the invention of claim 14, and claim 14 is therefore patentable over VanBuskirk, Tannenbaum and Neilsen.

Claim 15

Claim 15 depends from claim 12. Claim 15 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, no particular section of any of these references was cited as showing or suggesting the elements of claim 15.

In claim 15, the speech input is divided into frames and at least one frame of the speech is decoded into a sub-word unit. A frame number for the last frame to be decoded is divided by the total number of frames to produce a decode ratio. A progress meter is then displayed based on the decode ratio by changing the color of at least one background rectangle.

None of the cited references discuss using a decode ratio to change the color of at least one background rectangle and thereby display a progress meter.

Since none of the references discuss this step, their combination does not show or suggest the steps of claim 15. As such, claim 15 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 16

Claim 16 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

In claim 16, the step of displaying a progress meter in claim 15 is defined as multiplying the decode ratio by a full meter width to produce a progress width and dividing the progress width by a rectangle width that is indicative of the width of each background rectangle. This produces a rectangle count. The color of a number of background rectangles is then changed where the number of background rectangles is equal to the rectangle count.

None of the cited references show or suggest the steps of dividing a progress width by a rectangle width to get a rectangle count or of changing the color of a number of background rectangles equal to the rectangle count. As such, the combination of references does not show these steps.

Since none of the references show the steps of claims 16, the invention of claim 16 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claims 17 and 18

Independent claim 17 and dependent claim 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk in view of Tannenbaum and Neilsen.

Independent claim 17 provides a computer program having a least one insertion point marker that indicates a location on the display where a user desires to provide input. The computer program also includes a speech recognition routine and a meter generation routine that displays a progress meter near an insertion point based on the insertion point marker. The progress meter is quantitatively indicative of the amount of speech that has been decoded by the speech recognition routine.

The combination of VanBuskirk, Tannenbaum and Neilsen does not show or suggest the invention of claim 17 because none of these references quantitatively indicate the amount of speech that has been decoded by a speech recognition routine. In addition, none of these references show or suggest the ability to place such a progress meter at an insertion area.

As discussed above for claim 1, none of the cited references show or suggest a progress meter that indicates the amount of progress in decoding speech. Claim 17 is additionally patentable over the cited references because the decoding of claim 17 is performed by a speech recognition routine. None of the cited references show or suggest a progress meter that indicates the amount of speech that has been decoded by a speech recognition routine. In particular, Neilsen does not show or suggest such a progress meter because Neilsen does not mention speech recognition. Instead, Neilsen discuses print servers.

In addition, as discussed above for claim 1, none of the cited references show or suggest placing a progress meter near an insertion marker.

Since none of the cited references show a progress meter that shows the amount of speech decoded by a speech recognition unit and none of the cited references show placing a progress meter near an insertion marker, the combination of the references does not show or suggest the invention of claims 17 and 18.

Claim 19

Claim 19 depends from claim 17 and includes a limitation where a meter generation routine further comprises a transform routine that transforms a digital value into a set of coordinates for a shape on the display. The digital value is indicative of the magnitude of a portion of the speech signal. Thus, the meter generation routine of claim 19 is able to generate a progress meter that quantitatively indicates the progress of

decoding while at the same time providing a shape on the display that indicates the magnitude of the speech signal.

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen and Tannenbaum.

In the Office Action, it was noted that none of these references specifically teach displaying a volume meter close to a progress meter. However, it was asserted that since VanBuskirk teaches that a multi-function graphical user interface should supply information in the smallest possible space, it would be obvious to display a volume meter close to a decoding progress meter. Appellants dispute this assertion.

Appellants note that none of these references show or suggest a progress meter that quantitatively shows the amount of progress in decoding a speech signal. Thus, those skilled in the art would first have to create such a progress meter without any suggestion from these references to do so.

After the progress meter is constructed, those skilled in the art still would not have produced the invention of claim 19. To produce the invention of this claim, those skilled in the art would have to take a further step of combining the progress meter with a shape that indicates the magnitude of a speech value. However, there is no suggestion in the art for making such a combination.

Although VanBuskirk does teach that different types of information can be conveyed in the same graphical interface, it does not show or suggest that a volume meter should be combined with a progress meter. In addition, none of the references disclose how a progress meter could be displayed near a volume meter without confusing the user as to what the meters are conveying. Thus, there is no teaching or suggestion in any of the cited art for how to place a volume meter near a progress meter.

In light of the fact that none of the references show a progress meter that shows the amount of progress in decoding a

speech input and that none of the references show or suggest combing such a progress meter with a shape representing the magnitude of a speech value, the invention of claim 19 is patentable over the combination of VanBuskirk, Neilsen and Tannenbaum.

Claim 20

Claim 20 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 20 depends from claim 17 and includes a further limitation wherein the speech recognition routine decodes the speech signal into a set of subwords.

As discussed above for claim 17, the combination of VanBuskirk, Neilsen, and Tannenbaum does not show a quantitative progress meter and does not suggest how a quantitative progress meter can be constructed.

French-St. George also fails to show a quantitative progress meter that shows the amount of progress in decoding a speech signal. French-St. George only shows an animation related to the amount of time left for a user to provide speech to a speech recognition system. It does not discuss the progress of decoding a speech signal.

Since French-St. George does not disclose a quantitative progress meter that indicates the amount of progress in decoding a speech signal and none of VanBuskirk, Neilsen, and Tannenbaum show such a meter, the invention of claim 20 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum, and French-St. George.

Claims 21 and 29

Independent claim 21 is directed to a method in a computer system that displays a volume meter that is indicative of

the magnitude of at least a portion of a speech input. The volume meter is displayed near a progress meter, where the progress meter quantitatively indicates the amount of progress in decoding the speech signal.

Independent claim 29 provides a computer program designed to operate in a computer system having a display. The program includes a volume meter portion that is capable of displaying a volume meter, a speech recognition portion that is capable of converting human speech into a set of sub-words, and a progress meter portion that is capable of generating a progress meter that is quantitatively indicative of the amount of progress in converting the human speech signal into sub-words.

Claims 21 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, and Tannenbaum.

In the Final Office Action, the Examiner stated that none of VanBuskirk, Tannenbaum or Neilsen specifically teaches displaying a volume meter close to a progress meter. However, the Examiner asserted that VanBuskirk teaches that multiple functions should be placed in a single graphical user interface so that the interface is as small as possible and that because of this, it would be obvious to combine a volume meter with a progress meter. Appellants dispute this assertion.

Appellants note that none of these references show or suggest a progress meter that quantitatively shows the amount of progress in decoding a speech signal. Thus, those skilled in the art would first have to create such a progress meter without even a suggestion in the references that such a progress meter should be constructed and without any teachings as to how to construct such a meter.

After the progress meter is constructed, those skilled in the art still would not have produced the invention of claims 21 and 29. To produce the invention of those claims, those skilled in the art would have to take the further step of combining the

progress meter with a volume meter so that the two meters are displayed close together. Once again, there is no suggestion in the art for combining a volume meter with a progress meter.

Although VanBuskirk does teach that different types of information can be conveyed in the same graphical interface, it does not show or suggest that a volume meter should be combined with a progress meter. In addition, none of the references disclose how a progress meter could be displayed near a volume meter without confusing the user as to what the meters are conveying. Thus, there is no teaching or suggestion in any of the cited art for how to place a volume meter near a progress meter.

In light of the fact that none of the references show or suggest a quantitative progress meter and therefore are incapable of showing or suggesting that such a progress meter should be placed near a volume meter, the combination of references does not show or suggest the invention of claims 21 and 29. As such, claims 21 and 29 are patentable over VanBuskirk, Neilsen and Tannenbaum.

Claims 22 and 23

Claim 22 depends from claim 21 and claim 23 depends from claim 22. Claim 22 includes a further limitation wherein displaying a volume meter includes storing digital values representing the magnitudes of different portions of the speech signal. A separate token is then displayed for each separate digital value.

Claims 22 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. No portions of any of these references were cited as showing a step of displaying a separate token for separate digital values representing the magnitude of a speech signal.

In fact, none of the references show or suggest

displaying a separate token for separate digital values of a speech signal. Since none of the cited references show displaying a separate token, claims 22 and 23 are patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 24

Claim 24 depends from claim 23. In claim 24, a digital value representing the magnitude of a portion of a speech signal is transformed into a transform value. This transform value is then divided by a maximum meter value to produce a meter ratio. The height of a meter portion of a token is then determined using the meter ratio and the full meter height.

Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, no section of any of these references was cited as showing a step of transforming a digital value into a transform value and then dividing the transform value by a maximum meter value.

In fact, none of the references show or suggest these steps. As such, the invention of claim 24 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 25

Claim 25 depends from claim 24 and includes a further limitation wherein determining the height comprises multiplying the meter ratio by the full meter height.

Claim 25 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, none of these references show or suggest multiplying a meter ratio by a full meter height to determine the height of a meter portion of a token. As such, the invention of claim 25 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 26

Claim 26 depends from claim 24 and includes a further limitation wherein determining the height of a meter portion of a token includes determining if the meter ratio is greater than a base ratio and if the meter ratio is greater, multiplying the base ratio by the full meter height to determine the height of a base block while subtracting the base ratio from the meter ratio to produce an excess ratio. This excess ratio is then used with the full meter height to determine the height of a second block of the meter portion.

Claim 26 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, no particular portion of any of these references was cited to support this rejection.

None of the cited references mention any of the steps of comparing a meter ratio to a base ratio, multiplying a base ratio by a full meter height, subtracting a base ratio from a meter ratio to produce an excess ratio, or using an excess ratio and the full meter height to determine the height of a second block. As such, the combination of references does not show these steps. In light of this, claim 26 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 27

Claim 27 depends from claim 26 and includes steps of comparing the excess ratio to an intermediate ratio to determine if it exceeds the intermediate ratio and if it does exceed the intermediate ratio multiplying the intermediate ratio by the full meter height to produce the height of the second block. The intermediate ratio is then subtracted from the excess ratio to produce a remainder ratio. This is multiplied by the full meter

height to produce the height for a top block of the meter portion.

Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. However, none of these references show or suggest any of the steps found in claim 27. As such, claim 27 is patentable over the cited references.

Claim 28

Claim 28 depends from claim 24 and includes steps of dividing a number for a last decoded frame by a total number of frames to produce a progress ratio and multiplying the progress ratio by a full meter width to produce a progress width. The progress width is then divided by a token width to produce an affected number of tokens. For each of the affected number of tokens, the color of at least a portion of the token is changed so that it is different from the color of other tokens. Thus, claim 28 displays the progress meter by modifying the tokens used for the volume meter.

Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. No portions of any of these references were cited as showing any of the steps of claim 28.

In fact, none of these references show any of these steps. Therefore, claim 28 is patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claims 30 and 31

Claim 30 depends from claim 29 and claim 31 depends from claim 30. Claims 30 and 31 do not stand or fall with claim 29 because they were rejected using a different combination of references than those used to reject claim 29.

Claims 30 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and

French-St. George. Since claims 30 and 31 depend from claim 29, they include the limitations to displaying a progress meter near a volume meter that are found in claim 29.

As discussed above for claim 29, the combination of VanBuskirk, Neilsen, and Tannenbaum does not show or suggest a quantitative progress meter in combination with a volume meter. Similarly, French-St.George does not show or suggest a quantitative progress meter that shows the amount of progress in decoding a speech signal and does not show or suggest combining such a progress meter with a volume meter. As such, the combination of VanBuskirk, Neilsen, Tannenbaum and French-St.George does not show the invention of claim 29 or claims 30 and 31, which depend from claim 29. Therefore, claims 30 and 31 are patentable over VanBuskirk, Neilsen, Tannenbaum and French-St.George.

Claim 32

Claim 32 depends from claim 31 and includes components for taking a frame number representing the last frame of speech that was decoded by a speech recognition system and dividing it by a total frame number representing the total number of frames found in the speech signal to produce a progress ratio. It also includes a component for determining a maximum dimension for the progress meter and code for multiplying the progress ratio by the maximum dimension to produce a progress dimension.

Claim 32 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. In the Office Action, no particular sections of any of these references were cited as showing the functions described in claim 32.

In fact, none of the cited references show or suggest any of the functions performed in claim 32. As such, the combination of these references does not show or suggest the

invention of claim 32. Claim 32 is therefore patentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George.

Claim 33

Claim 33 depends from claim 32 and includes a limitation wherein volume token program code generates a volume token based in part on the progress dimension.

Claim 33 was rejected under 35 U.S.C. § 103(a) as being unpatentable over VanBuskirk, Neilsen, Tannenbaum and French-St. George. No particular portions of those references were cited to support the rejection of claim 33.

The invention of claim 33 is not shown or suggested in any of the cited references. In particular, none of the references show or suggest that a volume token should be based in part on a progress dimension. As such, the invention of claim 33 is patentable over the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George.

CONCLUSION

In conclusion, claims 1-33 are not shown or suggested in the combination of VanBuskirk, Neilsen, Tannenbaum and French-St. George and the claims are enabled by the specification. Appellants therefore request reversal of the Examiner's rejection of claims 1-33.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: Theo M Magee

Theodore M. Magee, Reg. No. 39,758
Suite 1600 - International Centre
900 Second Avenue South
Minneapolis, Minnesota 55402-3319
Phone: (612) 334-3222 Fax: (612) 334-3312

TMM

Appendix A

Claims On Appeal:

1. A method in a computer system for generating images on a display device, the method comprising:

displaying an insertion marker at an insertion area on a display, the insertion area representing the location at which the user desires to provide input; and

displaying a progress meter near the insertion area based on the location of the insertion marker, the progress meter quantitatively indicative of the amount of progress in decoding a speech input.

2. The method of claim 1 further comprising:

receiving input from the user indicating that a microphone is to be activated;

activating the microphone; and

displaying an indication that the microphone is active near the progress meter.

3. The method of claim 1 further comprising:

converting a user's speech input into an analog speech signal;

converting the analog speech signal into at least one digital speech value; and

transforming the at least one digital speech value into coordinates for at least one shape on the display positioned near the progress meter.

4. The method of claim 3 wherein transforming the at least one digital speech value into coordinates comprises:

applying a mathematical function to the at least one digital speech value to produce a transform value, the range between the lowest possible transform value and the highest possible transform value being less than the range between the lowest possible digital speech value and the highest possible speech value; and

using the transform value to identify coordinates for the at least one shape on the display.

5. The method of claim 4 wherein applying a mathematical function comprises taking the logarithm of at least one digital value.

6. The method of claim 4 wherein applying a mathematical function comprises taking the square-root of at least one digital value.

7. The method of claim 4 wherein the shape is a base rectangle and wherein using the transform value to determine the coordinates of the base rectangle comprises:

determining a base point for the base rectangle on the display;

accessing a stored rectangle width;

accessing a maximum transform value;

dividing the transform value by the maximum transform value to produce a transform ratio;

determining a calculated height based in part on the transform ratio; and

calculating the coordinates of the base rectangle based on the base point, the stored rectangle width and the calculated height.

8. The method of claim 7 wherein determining a calculated height comprises determining if the transform ratio is greater than a maximum height ratio for the base rectangle and if it is, performing a further step of multiplying the maximum height ratio for the base rectangle by a full meter height to produce the calculated height.

9. The method of claim 8 further comprising steps of:
subtracting the maximum height ratio for the base rectangle from the transform ratio to produce an excess ratio;
determining a second rectangle height based in part on the excess ratio; and
calculating the coordinates of a second rectangle based on the coordinates of the base rectangle, the stored rectangle width and the second rectangle height, the coordinates of the base rectangle and the second rectangle such that the second rectangle appears connected to a top edge of the base rectangle on the display.

10. The method of claim 9 wherein determining a second rectangle height comprises determining if the excess ratio is greater than a maximum height ratio for the second rectangle and if it is, performing a further step of multiplying the maximum height ratio for the second rectangle by the full meter height to produce the second rectangle height.

11. The method of claim 10 further comprising steps of:
subtracting the maximum height ratio for the second rectangle from the excess ratio to produce a remainder ratio;

determining a third rectangle height by multiplying the remainder ratio by the full meter height; and

calculating the coordinates of a third rectangle based on the coordinates of the second rectangle, the stored rectangle width and the third rectangle height, the coordinates of the second rectangle and the third rectangle such that the third rectangle appears connected to a top edge of the second rectangle on the display.

12. The method of claim 7 further comprising calculating the coordinates of a background rectangle, the background rectangle appearing somewhere between the base rectangle and a point at a full meter height above a bottom edge of the base rectangle.

13. The method of claim 1 wherein displaying a progress meter further comprises:

dividing the speech input into frames;

decoding at least one of the frames of speech into a sub-word unit;

dividing a frame number of the last frame to be decoded by the total number of frames to produce a decode ratio; and

displaying the progress meter based on the decode ratio.

14. The method of claim 13 wherein displaying the progress meter further comprises:

multiplying the decode ratio by a full meter width to determine a progress width; and

calculating the coordinates of a progress rectangle based on the progress width, a stored meter height and a base point on the display.

15. The method of claim 12 further comprising:

dividing the speech input into frames;

decoding at least one of the frames of speech into a sub-word unit;

dividing a frame number of the last frame to be decoded by the total number of frames to produce a decode ratio; and

displaying the progress meter based on the decode ratio by changing the color of at least one background rectangle.

16. The method of claim 15 wherein displaying the progress meter comprises:

multiplying the decode ratio by a full meter width to produce a progress width;

dividing the progress width by a rectangle width that is indicative of the width of each background rectangle, the division producing a rectangle count; and

changing the color of a number of background rectangles, the number of background rectangles being equal to the rectangle count.

17. A computer program comprising:

at least one insertion point marker capable of maintaining the coordinates of an insertion point on a display, the insertion point representing a location on the display where a user desires to provide input;

a speech recognition routine capable of decoding a speech signal; and

a meter generation routine capable of displaying a meter near the insertion point based on the insertion point marker, the meter being indicative of an amount of a speech signal that has been decoded by the speech recognition routine.

18. The computer program of claim 17 wherein the meter generation routine further comprises:

a microphone state variable having a value that is indicative of whether a microphone is active; and

an active microphone display routine, capable of displaying an indication that the microphone is active near the insertion point.

19. The computer program of claim 17 wherein the meter generation routine further comprises a transform routine capable of transforming a digital value into a set of coordinates for a shape on the display, the digital value being indicative of the magnitude of a portion of a speech signal.

20. The computer program of claim 17 wherein the speech recognition routine is capable of decoding a speech signal into a set of sub-words.

21. A method in a computer system for generating images on a display device, the method comprising:

receiving a speech input signal that is indicative of human speech;

displaying a volume meter that is indicative of the magnitude of at least a portion of the speech input signal; and

displaying a progress meter close to the volume meter on the display so that a user can perceive both the progress meter and the volume meter without substantially moving their eyes, the progress meter quantitatively indicating the amount of progress of a speech recognition system in decoding the speech input signal.

22. The method of claim 21 wherein displaying a volume meter comprises:

storing digital values representing the magnitudes of different respective portions of the speech signal;

accessing the stored digital values;

displaying a separate token for each separate digital value that is accessed.

23. The method of claim 22 wherein displaying a separate token comprises:

displaying a meter portion of the token, the meter portion's size being positively related to the magnitude of the speech signal such that higher magnitude portions of the speech signal have larger meter portions; and

displaying a background portion of the token, the background portion's size being negatively related to the magnitude of the speech signal such that higher magnitude portions of the speech signal have smaller background portions.

24. The method of claim 23 wherein displaying the meter portion comprises:

transforming a digital value representing the magnitude of a portion of the speech signal to produce a transform value, the range between the smallest and largest transform value being less than the range between the smallest and largest digital value;

dividing the transform value by a maximum meter value to produce a meter ratio; and

determining the height of at least a portion of the meter portion using the meter ratio and a full meter height.

25. The method of claim 24 wherein determining the height of at least a portion of the meter portion comprises multiplying the meter ratio by the full meter height.

26. The method of claim 24 wherein determining the height of at least a portion of the meter portion comprises:

determining if the meter ratio is greater than a base ratio and if the meter ratio is greater than the base ratio performing steps comprising:

multiplying the base ratio by the full meter height to determine the height of a base block of the meter portion;

subtracting the base ratio from the meter ratio to produce an excess ratio;

using the excess ratio and the full meter height to determine a height of a second block of the meter portion.

27. The method of claim 26 wherein using the excess ratio and the full meter height to determine a height of a second block comprises:

determining if the excess ratio exceeds an intermediate ratio and if the excess ratio exceeds the intermediate ratio performing steps comprising:
multiplying the intermediate ratio by the full meter height to produce the height of the second block;
subtracting the intermediate ratio from the excess ratio to produce a remainder ratio; and
multiplying the remainder ratio by the full meter height to produce a height for a top block of the meter portion.

28. The method of claim 24 wherein the speech recognizer decodes the speech input signal by converting frames of the speech input signal into sub-words and wherein displaying a token comprises:
dividing the number of the last frame decoded by the speech recognizer by a total number of frames that form the speech input signal to produce a progress ratio;
multiplying the progress ratio by a full meter width to produce a progress width;
dividing the progress width by a token width to produce an affected number of tokens; and
for each of the affected number of tokens, setting the color of at least a portion of each token so that it is different from the color of other tokens.

29. A computer program designed to operate in a computer system having a display, the computer program comprising:
a volume meter portion capable of displaying a volume meter on the display that is indicative of the volume of a human speech signal;

a speech recognition portion that is capable of converting the human speech signal into a set of sub-words; and

a progress meter portion capable of displaying a progress meter on the display proximate the volume meter, the progress meter being quantitatively indicative of the amount of progress of the speech recognition portion in converting the human speech signal.

30. The computer program of claim 29 wherein the volume meter portion comprises:

meter size program code capable of determining a maximum dimension for the volume meter;

volume ratio program code capable of calculating a volume ratio that is defined as a magnitude value associated with the human speech signal over a maximum possible magnitude value; and

volume token program code capable of generating a volume token on the display that has a size that is determined from the volume ratio and the maximum dimension for the volume meter.

31. The computer program of claim 30 wherein the volume token program code comprises:

positive relation program code capable of generating a foreground portion of the volume token that is larger for higher magnitude values associated with the human speech signal; and

negative relation program code capable of generating a background portion of the volume token that is smaller for higher magnitude values associated with the human speech signal.

32. The computer program of claim 31 wherein the progress meter portion comprises:

progress ratio program code capable of dividing a frame number representing the last frame of the human speech signal converted by the speech recognition system by a total frame number representing the total number of frames found in the human speech signal to produce a progress ratio;

meter dimension program code capable of determining a maximum dimension for the progress meter; and

progress dimension program code capable of multiplying the progress ratio by the maximum dimension for the progress meter to produce a progress dimension.

33. The computer program of claim 32 wherein the volume token program code generates a volume token based in part on the progress dimension.

Appendix B

Cited References:

VanBuskirk et al. - U.S. Patent No. 6,075,534 - June 13, 2000

Tannenbaum - U.S. Patent No. 6,233,560 - May 15, 2001

Neilsen - U.S. Patent No. 6,639,687 - October 28, 2003

French-St. George et al. - U.S. Patent No. 6,018,711 - January 25, 2000